Norton Speed Disk™ for Windows NT/2000 User's Guide

(Also known as Symantec Speed Disk)

Symantec Speed Disk™

Norton Speed Disk™ for Windows NT/2000 User's Guide

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CHAPTER 1

Getting started

Introducing Norton Speed Disk

Norton Speed Disk for Windows NT/2000 provides powerful analysis and optimization tools to maintain peak performance of your hard drives.

Using a combination of defragmentation and optimization, Norton Speed Disk optimizes all disk elements, including files, directories, the paging file (Pagefile.sys), the Master File Table (MFT), and meta data, without rebooting the machine. Under Windows 2000, additional system files are present, including a journal log for disk transactions. Norton Speed Disk optimizes this file when it is present.

Optimization vs. defragmentation

The terms *defragmentation* and *optimization* are often used interchangeably, but they are not the same.

- *Defragmentation* is the process of rearranging the way files are organized on a hard drive so that the data comprising each file is stored in contiguous disk clusters.
- *Optimization* maximizes the usable free space on a hard drive and groups files based on how they are accessed. The most frequently used files are placed at the beginning of the disk for fastest access. Infrequently used files are placed out of the way. Free space is consolidated to avoid fragmenting newly added files, and extra space is added after major data structures so they can grow without immediately becoming fragmented again. Optimization can drastically improve performance, both after initial optimization and on a continuing basis.

To do this	Go here
Completely optimize all drives online, including the directories, MFT, paging file (Pagefile.sys), and meta data.	"Running the initial optimization" on page 28.
See a detailed analysis of file and free space fragmentation, and overall drive utilization.	"Analyzing drives" on page 33.
Customize optimization features such as file placement, use of machine resources and memory, and fragmentation threshold.	"Customizing Norton Speed Disk" on page 41.
Schedule Norton Speed Disk to optimize drives at a set time.	"Scheduling optimizations" on page 41.
Record specified optimization events to the Windows NT/2000 Event Log.	"Recording optimization events" on page 48.

Norton Speed Disk technology

Norton Utilities products have a tradition of providing secure, reliable disk utilities. Norton Speed Disk extends this tradition with its patented optimization technology, cutting edge research, and quality assurance to produce the most reliable, effective disk optimization utility to date.

A range of customization features let users and administrators fine-tune optimization based on each drive's purpose and workload, to ensure that machine performance is as high as possible.

Norton Speed Disk can:

- Optimize an entire drive online, including files, directories, MFT, even paging files and security meta data.
- Optimize without rebooting.
- Optimize in only one pass—even after optimizing paging files.
- Use intelligent analysis to place file types in the optimal order for best performance, which reduces the frequency and necessity for substantial re optimizations.

Some of the benefits of using Norton Speed Disk on networks include:

- Workstations and servers are optimized so they run at peak performance. Improved server performance means increased throughput for applications like groupware and databases. Less wait time means greater productivity.
- System (desktop and server) uptime is increased and the various threats associated with downtime are reduced. IS time and resources spent responding to performance-related, non-strategic issues (such as system crashes due to lack of disk space) are decreased.
- Easy optimization management with one central management console (provided with Norton Speed Disk for Windows NT/2000 Server). Centralized scheduling and alerts let administrators view all the information they need from one location.
- Flexible interface design support both centralized and decentralized management styles.
- Built-in scheduling features minimize the amount of active administration time required to run and maintain Norton Speed Disk.

System requirements

The minimum system requirements are:

Machine	IBM PC or compatible
CPU	Intel 80486/66 processor or higher
Operating system	Windows NT v. 4.0, (Workstation or Server) with Service Pack 3, 4, 5, 6, or Windows 2000
RAM	32 MB RAM or greater
Disk space	20 MB
File system	All NTFS and FAT cluster sizes: (512 bytes, 1k, 2k, 4k, 8k, 16k, 32k, 64k)
Drives	CD-ROM drive or network connection
Monitor	16 color VGA, 256 color recommended

Installing Norton Speed Disk

The Norton Speed Disk installation procedure lets you specify where to install and provides the opportunity to run LiveUpdate to check for the latest updates to the program.

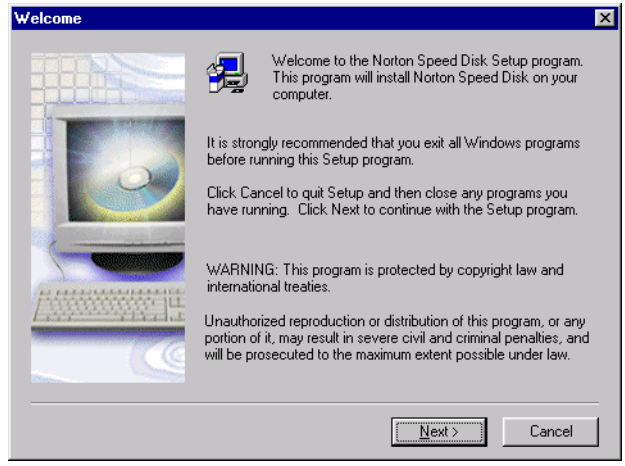
Note: If you intend to administer Norton Speed Disk on a network, see the installation instructions in the *Norton Speed Disk Implementation Guide* included with Norton Speed Disk for Windows NT/2000 Server (Enterprise edition only).

To install Norton Speed Disk for Windows NT/2000:

1 Insert the Norton Speed Disk CD in the CD-ROM drive.

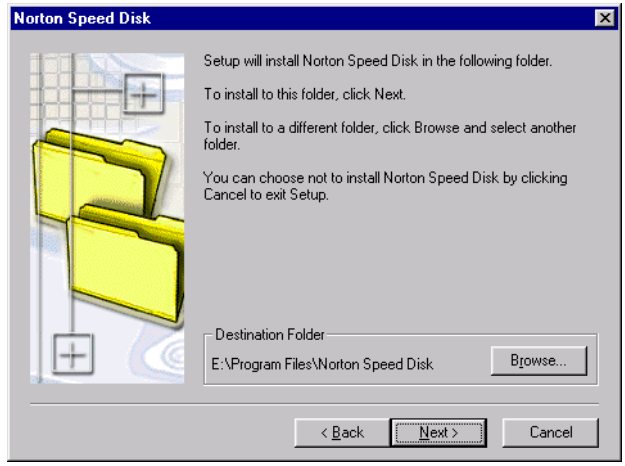
- If the installation window does not appear, open the CD and double-click CDSTART.EXE.

2 Click Install.



3 Proceed through the installation screens.

During installation you have a chance to confirm the location to install Norton Speed Disk.



To install Norton Speed Disk to a different location, click Browse, and select another folder, or enter a new folder name, then click OK.

4 Select a Program Group Option:

- Group Will Be Common To All Users

  Anyone who has access to the workstation can use the Norton Speed Disk group.

- Group Will Be A Personal Group

  Only the person currently logged in can use the new Norton Speed Disk group.

5 Indicate if you want LiveUpdate to check for program updates after installation. If an update exists, LiveUpdate will download and install the update. You must have an Internet connection to access the Symantec LiveUpdate FTP server. For more information, see "Updating Norton Speed Disk" on page 15.

At the end of installation, Norton Speed Disk is installed to the path selected in step 3, for example:

```
c:\Program Files\Norton Speed Disk\
```

A menu item is also added to the workstation Start menu.

What to do after installation

Once Norton Speed Disk is installed, you can start optimizing your drives.

To do this	Go here
Check for program updates with LiveUpdate.	"Updating Norton Speed Disk" on page 15.
Review optimization strategies.	"Deciding on an optimization strategy" on page 24.
Optimize for the first time.	"Running the initial optimization" on page 28.
Optimize multiple drives at the same time.	"Optimizing multiple drives concurrently" on page 32.
Check a drive's fragmentation level.	"Analyzing drives" on page 33.
Schedule optimization times.	"Scheduling optimizations" on page 41.
Set global performance options.	"Setting global options" on page 45.
Customize drive optimization.	"Setting drive options" on page 52.

Note: (Enterprise edition only.) If during the installation process you select Standard Installation Without User Interface, you will not see the Norton Speed Disk window at all. Select this option if you plan to run Norton Speed Disk from a central console such as Norton System Center Console, which comes with Norton Speed Disk for Windows NT/2000 Server. For more information, see the *Norton Speed Disk Implementation Guide*, which is included with Norton Speed Disk for Windows NT/2000 Server.

Starting and quitting Norton Speed Disk

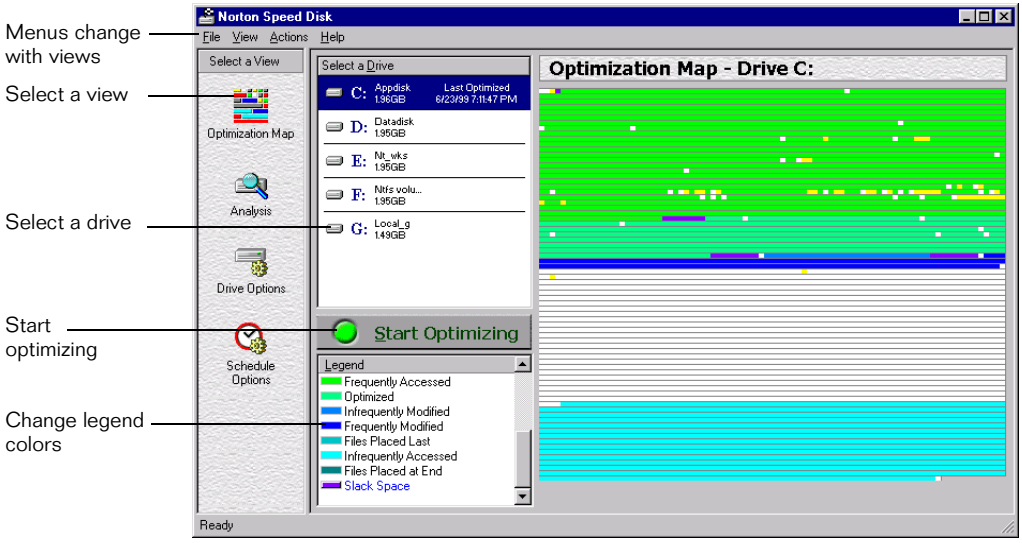
Use the following steps to start Norton Speed Disk.

Note: You can also start Norton Speed Disk by scheduling optimization. For more information, see "Scheduling optimizations" on page 41.

To start Norton Speed Disk:

1 Click Start, point to Programs, and then click Norton Speed Disk.

The Norton Speed Disk window appears with the Optimization Map open. (The map colors are gray until Norton Speed Disk scans a drive.)



2 In the view bar (on the left), click an icon:

View	Description
Optimization Map	The Optimization Map lets you optimize drives. After you start optimizing, the drive map shows the file types in the colors displayed in the Legend. For more information, see "About the optimization map" on page 14.
Analysis	The Analysis view lets you generate statistics about a selected drive. For more information, see "Analyzing drives" on page 33.
Drive Options	The Drive Options view lets you customize file placement on a drive. For more information, see "Customizing file placement" on page 52.

View	Description
Schedule Options	The Schedule Options view lets you set an optimization schedule for each drive. For more information, see "Scheduling optimizations" on page 41.
Legend	The legend lists the file types represented by the colors in the drive map. For more information on file types, see "About the optimization map" below. To change the colors in the legend, see "Customizing map and chart colors" on page 54.

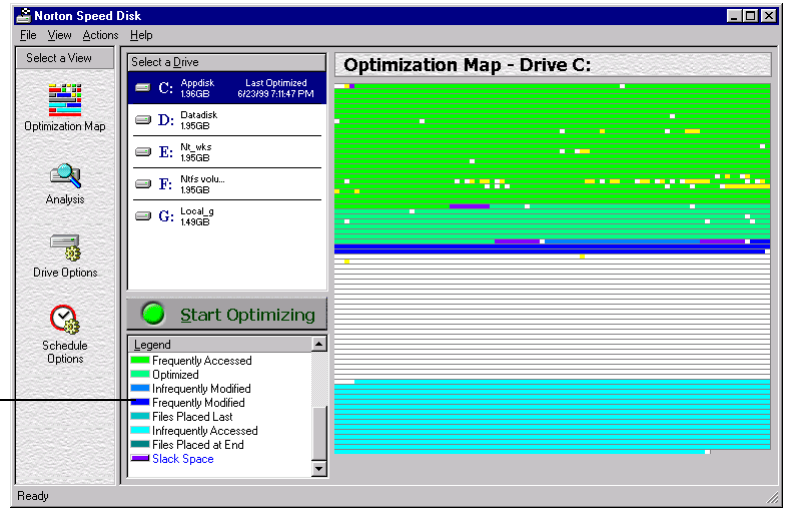
To quit Norton Speed Disk:

- From the File menu, choose Exit, or
- Click the close button on the main window.

Note: If you start optimizing a drive and then quit Norton Speed Disk, optimization continues running in the background until it is completed.

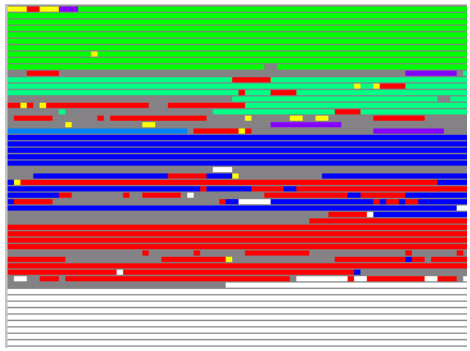
About the optimization map

The optimization map is a graphical representation of the files arranged on a drive. The color-coding helps you identify how efficiently drive space is being used. You can customize the colors used for the drive map by clicking the color blocks on the drive map legend.



Clicking a color opens the Color dialog box

Each block on the map represents a number of clusters on the drive.



For more information on what the Optimization Map colors represent, see "File placement during optimization" on page 23. To customize the legend colors, see "Customizing map and chart colors" on page 54.

Updating Norton Speed Disk

Use LiveUpdate to ensure that you have the most current program files. LiveUpdate is the easiest way to keep Norton Speed Disk program files current because it checks for—and installs—the updates automatically.

You can run LiveUpdate at any time, as long as you have an Internet connection.

To run LiveUpdate:

1 From the File menu, choose LiveUpdate Norton Speed Disk.

2 Click Next and follow the prompts to proceed with the update.

LiveUpdate goes to the Symantec FTP site to download the latest program file.

The update is installed automatically.

Note: (Enterprise edition only.) If you use Norton Speed Disk for Windows NT/2000 Server to administer Norton Speed Disk, you can set up LiveUpdate to download updates from an internal network server. See the *Norton Speed Disk Implementation Guide*, which is included with Norton Speed Disk for Windows NT/2000 Server.

Uninstalling Norton Speed Disk

Norton Speed Disk includes an Uninstall option in case you need to remove it from your computer. You can also use the system Add/Remove Programs utility.

To uninstall Norton Speed Disk from the Start menu:

- Click Start, point to Programs, click Norton Speed Disk, and then click Uninstall Norton Speed Disk.

To remove Norton Speed Disk using Add/Remove Programs:

1. Click Start, point to Settings, and then click Control Panel.
2. Open Add/Remove Programs and make sure the Install/Uninstall tab is in front.
3. In the list of programs:
   a. Select Norton Speed Disk and click Add/Remove.
   b. Confirm the deletion.
4. If you need to delete any files manually, look in the following default installation path (or in another path to which Norton Speed Disk was installed):

   ```
   c:\Program Files\Norton Speed Disk\*.*
   ```

CHAPTER 2

Optimizing drives

How Norton Speed Disk works

Norton Speed Disk improves a computer's performance by using patented optimization technology to increase file access speed and minimize refragmentation. While utilities that defragment files are providing only a small benefit to a user's machine, Norton Speed Disk optimization ensures that servers and workstations are always running at peak performance.

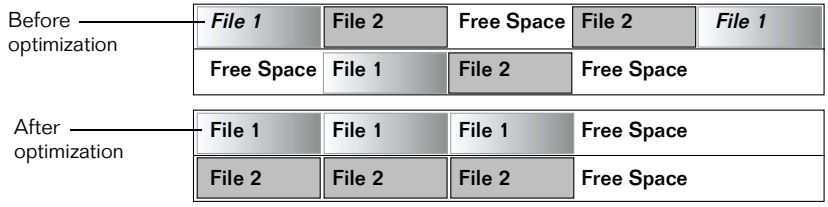
How fragmentation occurs

The space on a drive is divided up into discrete units for allocating file space. The Windows NT file system (NTFS) uses *clusters* as its smallest allocation unit. When files are stored to the drive, they are broken up into cluster-size pieces that are tracked in a disk catalog. Cluster sizes vary depending on the overall size of the drive.

Cluster allocation size	Disk size
512 bytes	<512 MB
1024 bytes	512 MB to 1 GB
2048 bytes	1 GB to 2 GB
4096 bytes	>2 GB

During normal file operations, file and free space fragments are created on the drive. As they are created, modified, and deleted, files can become larger and outgrow the original number of contiguous clusters allocated for them on a hard drive, or become smaller and no longer need all their allocated space. For growing files, the Windows NT file system must find

somewhere else to save the overflow. For shrinking files, empty space may be left behind where the file fragments once were.



Over time, fragments of a file may be scattered in several places, in a totally different area of the drive, away from the original location of the file. These multiple file fragments are tracked in the disk catalog, or Master File Table (MFT), which also grows with the addition of location information.

How fragmentation affects overall performance

When files are saved or copied to a disk, there is no discrimination between types of files. On an unoptimized drive, all file types, including applications, .dlls, and data files, are intermingled.

When a fragmented file is accessed, drive performance is slower because the drive head must do more work to locate, load, save, and generally keep track of all the fragments of the file.

High fragmentation levels affect a drive's overall performance, because more demands are placed on the drive read/write mechanism. If free space is also fragmented, the disk head may have to hunt for adequate free space to store temporary files or newly added files.

Poor performance in retrieving data from the disk can affect the overall productivity of server applications, reflected in reduced transaction rates to databases, and increased levels of user frustration on mail and news servers.

Fragmentation also affects video and other multimedia performance. For example, if a multimedia file such as a movie is being played, and the movie file is fragmented, the player may have to wait for the disk head to scramble around for the next fragment to load.

Norton Speed Disk optimizes fragmented files by rearranging file fragments into adjacent or contiguous clusters. When the disk head can access all the file data in one location, the file is read into memory faster.

Norton Speed Disk also optimizes free space, creating contiguous free space on the drive. This improves system performance when you are adding new files, especially under low disk space conditions where free space fragmentation can cause newly added large files to be fragmented from the start.

About MFT and paging file fragmentation

Just like user data files, the MFT and paging files can become fragmented over time. Since these system files are accessed frequently, their fragmentation can cause delays in system boot time and other types of performance degradation.

As with any operating system's file system, NTFS experiences file and free space fragmentation. This affects the read/write performance of the system in general, down to the core file system level. If you monitor the status of your MFT file you will notice that, as more read/writes are performed on the system and the amount of file tracking overhead data increases, the MFT file grows to handle the increased activity.

Although the MFT file expands to accommodate new information, it never shrinks, even when the number of files decreases or disk activity slows down. Unlike the paging file, whose size is adjusted with each reboot, not even rebooting your system resets the MFT file to a smaller size. Because the MFT resides at the beginning of any drive partition, it has no free disk space to expand contiguously. NTFS is forced to find free space elsewhere on the same partition for the MFT file's overflow fragments.

Norton Speed Disk safely optimizes the MFT and paging file structures without the need to restart the machine, make multiple optimization passes, or disconnect from the network.

About directory and meta data fragmentation

NTFS stores data it uses for disk, directory, and file management in files called meta data. These files are also subject to fragmentation. Norton Speed Disk optimizes directories and meta data dynamically, without the need to restart the machine or make multiple optimization passes, or disconnect from the network.

About free space fragmentation

Just as files can become fragmented, so can the free space on a drive. The lack of contiguous free space causes files to be created or extended in fragments. Fragmentation of the drive's free space also has a negative impact on system performance, because the system has to hunt for multiple free spaces to store data.

In addition to defragmenting your existing files, Norton Speed Disk consolidates free space, so those newly created and extended files will remain as unfragmented as possible.

Many of the free space fragments can be too small to be usable under Windows NT/2000. These fragments represent drive space that is essentially wasted. Norton Speed Disk consolidates these free space fragments into large areas of free space. Free space consolidation ensures that new files can make use of all available disk space and are less likely to be fragmented the first time they are saved.

Optimization solutions

Norton Speed Disk automatically fixes the fragmentation and organization problems described in the previous section. It automatically places files in the best location for most efficient access, flexible growth, and peak drive performance. It also lets you specify when to optimize and how the optimization should be performed. You can:

- Schedule optimizations for individual volumes based on time or threshold of fragmentation.
- Adjust the system resources used by Norton Speed Disk in relation to other running processes.
- Customize the optimization for each drive.
- Run Norton Speed Disk in the background to optimize volumes at preset times.
- Record optimization events to the system Event Log.

Customizable drive optimization

During optimization, Norton Speed Disk places files in the best location for most efficient access and flexible growth. However, there may be situations where you need to ensure that certain files are placed in specific areas on

the drive, so they are accessed first on the drive, or have lots of room to expand without being fragmented.

In the Drive Options view you can specify areas where individual files or groups of files are placed on the drive. You can also specify any files that you don't want Norton Speed Disk to move. For more information, see "Setting drive options" on page 52.

Norton Speed Disk remembers the optimization options you choose for each drive, so you need not reset options each time you optimize unless you want to change them.

File placement during optimization

Norton Speed Disk places files in order, from the beginning of the drive to the end of the drive. After each main data structure Norton Speed Disk adds a small amount of extra space to allow for future growth with reduced refragmentation. The following table describes where files are placed during optimization.

Order on drive	Name	Drive map legend label
Start	Master File Table (MFT)	Directory
2	Files in the Files First list in Drive Options	Files Placed First (optional)
3	Paging File	Pagefile
4	Directories	Directory
5	Files accessed in the last 2 months	Frequently Accessed
6	Files optimized by Norton Speed Disk	Optimized
7	Files modified within the last 2 to 4 months	Infrequently Modified
8	Files modified within the last 2 months	Frequently Modified
9	Files not accessed in the last 2 months	Files Placed Last
10	Files not modified in the last 4 months	Infrequently Accessed
11	Files Last list in Drive Options	Files Last (optional)
12	Optimized free space	Free Space

Order on drive	Name	Drive map legend label
--	Extra space placed after data files to allow for growth	Slack Space
--	Files and other disk data not yet optimized	Fragmented
13	Files in the Files At End list in Drive Options	Files Placed At End (optional)

In general, the default settings will provide the best performance. You should change the default settings only if your files require special consideration.

For example, if your company uses a utility program that updates the file dates even when the files are not frequently used, you may want to limit optimization on these files so Norton Speed Disk doesn't move them to the frequently used area of the disk.

Note: The Files First, Files Last, Files At End, and Unmovable Files are user-defined Drive Options. For more information, see "Specifying file placement during optimization" on page 53.

Deciding on an optimization strategy

You may want to develop a strategy for optimizing your drives. Although the impact of Norton Speed Disk optimization should not be noticeable, there may be times when you want no impact at all. For example, if you manage network drives you may want to schedule optimization to run at a time when the fewest number of users will be using a busy server. This will also decrease the amount of time it takes for Norton Speed Disk to complete optimization.

Which optimization strategy you adopt depends on your needs and your drive characteristics. For example, the strategy adopted for servers, which may have a lot of transitory traffic, security issues, and variable workloads, will be different than the strategy used for workstations, which may have groups of files that are used in routine patterns.

For example, if your company has seasonal demands, such as monthly or quarterly budget forecasts where many departments are sending data in separate files for consolidation, you will want to optimize before and after

the budgeting process. In preparation for the main budgeting month, you optimize the drive to make sure adequate disk space is available for hundreds of small contributory data files as well as for the growing size of the main budget file. After the budgeting process is over for another year, budget files have stabilized and contributory data has been archived, you optimize the drive again to consolidate the empty space left by deleted files.

In a Web or desktop publishing group, your drives might hold source files for multiple projects, including text and graphics files, that are worked on for a few weeks or months, are completed, and replaced by others. With hundreds of small files being created, copied, modified, and deleted, your drives may need optimization based on fragmentation threshold, or on demand, after a project ends.

In general, the drive size, the percentage of files to free space, and the percentage of fragmented files (to total files) affect the decision about when and how frequently to optimize a drive.

- Expect optimization to take longer the first time it is run on a volume. This is because Norton Speed Disk must relocate all the data on the drive into the optimum order described in "File placement during optimization" on page 23.

  If you schedule regular optimization to maintain this file placement, subsequent runs on the same drive will quickly clean up fragmentation that has occurred since the last optimization, while leaving the majority of previously optimized files where they are.

- Large drives that are nearly full may take longer to optimize, especially if they are heavily fragmented. Cleaning out \temp directories, the Internet cache, and the Recycle Bin, and removing software that is no longer used creates free space that will significantly speed up the optimization process.

- Norton Speed Disk can safely optimize drives on systems that are in active use. The resulting optimization may not be 100% perfect, as files may be created, extended, truncated, or deleted during the run, but most of the benefits of optimization will still be realized.

- Schedule Norton Speed Disk to run during off-peak hours. If the system runs full time and really has no off-peak hours, you can run Norton Speed Disk with its normal resource setting, which runs at a lower priority than other processes. This approach may take longer, and may be subject to more user activity (file creation, extensions,

truncations, and deletions) but will still result in significant performance improvements.

Optimization issue	Suggestions
Number of files	The more files on the drive, the more time is needed for optimization. You will need to consider the drive's total number of files and the file types, for example, large contiguous databases vs. numerous small document files. To help determine the status of the drive, run the Analyze Drives feature described on page 33.
Number of file fragments	The more file fragments, the more time is needed for optimization.
Number of fragmented files	The greater the number of fragmented files, the more time is needed for optimization.
Free disk space	The more free disk space there is on the drive, the faster optimization will occur.
Priority (given to optimization in relation to other drive activity)	The greater the priority given to Norton Speed Disk, the faster optimization will complete. You can adjust this setting in the Priority settings described on page 46.
Available memory and other workload demands	The real-time workload (how frequently the drive is accessed and for what types of activities), as well as available memory, affect optimization time. The more workload, the longer optimization may take. If you are optimizing during working hours, optimization may take longer because memory is being shared with other applications. Optimization during off-peak hours, when traffic is minimal, will reduce optimization time.
Drive size	The number of files and file fragments affect the amount of time needed for optimization. Optimizing a highly fragmented smaller drive may take longer than optimizing a lightly fragmented larger drive.
Number of processes running on the system	The more processes running, the more time is needed for optimization.
Processor speed	The slower the processor speed, the more time is needed for optimization.

Initial optimization time

A drive's first optimization may take significantly longer than the subsequent optimization. Norton Speed Disk must move the files and free space into the order described in "File placement during optimization" on page 23. After a drive has been optimized, only new and expanded files will need optimization.

The benefits of optimization, which include faster access and improved overall performance, make the time worthwhile almost immediately. Norton Speed Disk takes advantage of the solid foundation established in the first optimization to dramatically reduce run time in subsequent optimizations.

Tip: If you find that optimization is taking too much time, or using too many system resources, you may want to fine tune the Norton Speed Disk global options. For more information, see "Setting global options" on page 45.

Preparing for optimization

Before optimizing any drives, you should make the following preparations:

Before optimizing, do this	Why you should do it
Run the CHKDSK utility to identify and repair any disk errors before running Norton Speed Disk.	Although you can set an option to have Norton Speed Disk automatically scan for errors on NTFS volumes before optimizing, it's best to run CHKDSK in advance of Norton Speed Disk to identify and repair any bad sectors or other file or disk damage that could cause problems during optimization. Running CHKDSK also ensures that lost file sectors or chains are not included in the optimization.
Delete temporary and obsolete files such as those in the \Temp directory, any spool folders, any Internet temporary files, the Recycle Bin, and so on.	This avoids the extra work of optimizing obsolete, unused, and trash files that consume optimization time and resources. Including these file in optimization means that useful space is occupied by useless files, causing the drive to become refragmented when these files are emptied from the Recycle Bin or erased from temporary folders.

Before optimizing, do this	Why you should do it
Complete any major software installations or uninstallations before optimizing.	This reduces the necessity to reoptimize after the installation or uninstallation. Typically, installation processes create temporary files, and occupy large amounts of space temporarily. Uninstalling programs after optimizing creates unnecessary work.
Back up your files.	It's always a good idea to back up your software. Although Norton Speed Disk maintains the integrity of your data, we strongly recommend that you back up important files before making any major changes to your drives, including optimization. Maintaining a schedule of regular backups is good practice at any time.

Running the initial optimization

Once you have ensured that the drive is ready for optimization by following the suggestions listed in the previous section, "Preparing for optimization" on page 27 you are ready to begin optimizing.

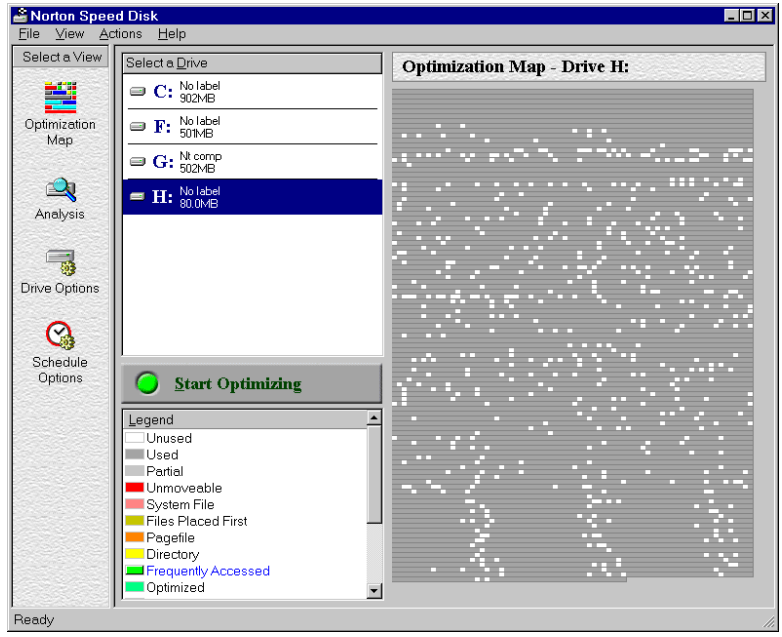
To optimize a drive:

1. In the Select A View list, select Optimization Map.
2. Select the drive to optimize.
3. Click Start Optimizing.

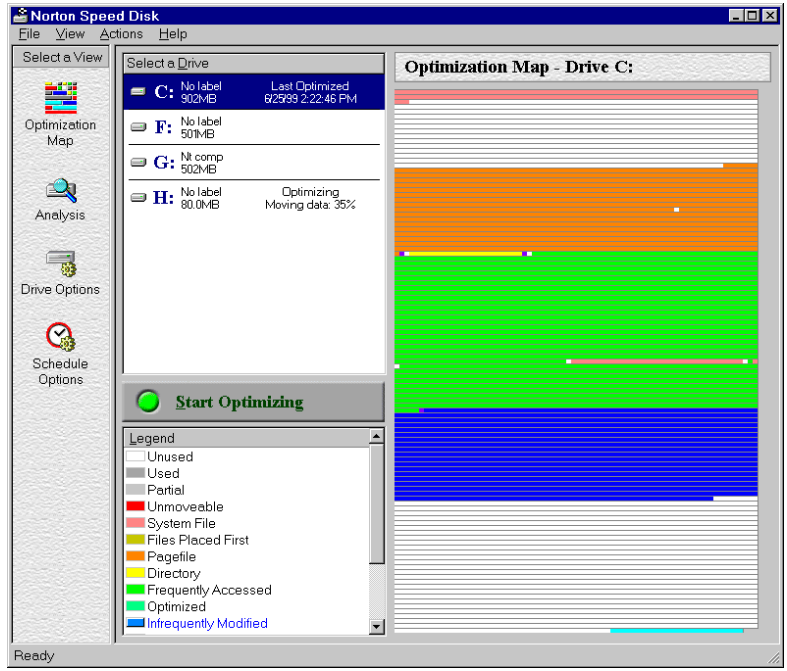
   Norton Speed Disk proceeds to optimize the drive.

   You can watch Norton Speed Disk progress in the Optimization Map or minimize the window and continue with other work.

After it has scanned the drive, the optimization map displays the file distribution and fragmentation.



As optimization progresses, the map changes to reflect the reorganization of files on the drive.



Phases of optimization

Norton Speed Disk goes through several phases in the course of optimization.

Phase	Activity
Verifying drive integrity on NTFS volumes (optional)	When this setting in the Global Options is turned on (the default setting is off), Norton Speed Disk runs a brief check of the NTFS drive for any problems. To change this setting, choose Global Options from the View menu and click the Scan for errors before optimizing NTFS volumes check box. For more information, see "Adjusting priority and memory resource use" on page 46. If problems are found, you are prompted to run the Windows NT CHKDSK command to reclaim lost chains and repair any disk damage.
Scanning	Norton Speed Disk scans the entire hard drive and gathers information about how many files of each file type are present, the amount of empty space, and the number of partially used clusters. Gathering data on file fragmentation and unmovable files can take some time, depending on the size of the volume, the number of files on the volume, and the degree of file fragmentation. Unmovable files are distinguished in the optimization map after the drive is scanned in the first phase of optimization. However, to save time, the map does not distinguish fragmented or unmovable files until after Norton Speed Disk performs a fragmentation analysis.
Sorting	Norton Speed Disk sorts the files according to the types described in "File placement during optimization" on page 23.
Moving	Norton Speed Disk moves the files into the areas of the drive assigned to their types, as described in "File placement during optimization" on page 23.

Note: On non-NTFS volumes you will be prompted to run CHKDSK before optimizing.

About unmovable files

Windows NT/2000 produces some files and file fragments during system operation that are classed as unmovable. NTFS system files, (except for the MFT, root directory, and paging file) can't be moved. Directories and paging files on FAT volumes also cannot be moved.

Fragments on the drive identified by Norton Speed Disk as unmovable are not moved during optimization. You can also designate any file or group of files to be unmovable by selecting the Drive Options for a drive, opening the Unmovable tab, and adding the file or group of files to the Unmovable tab.

Tip: For Norton Speed Disk, very few file types are unmovable. If you notice that some files are not optimized, check the access rights to the files. You must have administrator rights to the drive for Norton Speed Disk to move some types of files that are defined by the administrator, or are defined by administrator for another user.

About extra space

On the drive map you may see small blocks of extra space mixed in with optimized files, even after Norton Speed Disk has optimized a drive. This is another way Norton Speed Disk maintains a drive's optimization longer. Norton Speed Disk adds extra space after each category of optimized files to allow for future growth. This allows categories of files to expand without causing immediate fragmentation.

Optimizing multiple drives concurrently

You can start several optimizations concurrently by selecting drives and starting optimization on one drive after another.

To optimize multiple drives:

1. In the Select A View list, select Optimization Map.
2. Select the first drive you want to optimize.

- To see a pre-optimization fragmentation analysis, click the Analyze view icon first. For more information, see "Analyzing drives" on page 33.

3 Click Start Optimizing.

Norton Speed Disk proceeds to optimize the drive.

4 Select another drive in the list and click Start Optimizing. The maximum number of concurrent drive optimizations is unlimited, but the recommended number is 2 or less.

Note: Each concurrent optimization requires additional system resources. For example, to optimize three drives concurrently, Norton Speed Disk needs three times as many system resources as for a single optimization. If you plan to start or schedule concurrent optimizations, make sure you plan sufficient system resources to complete optimization in the time you expect. For more information, see "Adjusting priority and memory resource use" on page 46.

Analyzing drives

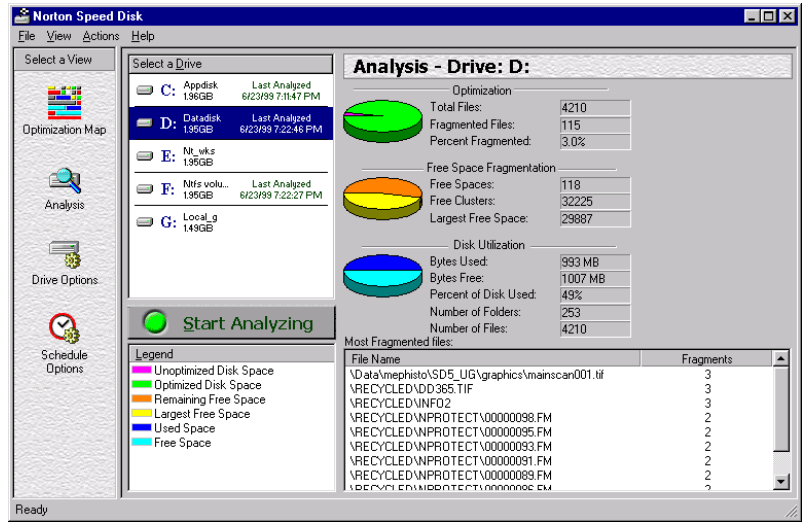
Norton Speed Disk performs an analysis of each drive to help you determine the state of the drive prior to optimization. The Analysis view displays file fragmentation, free space fragmentation, and general drive utilization. The lower part of the view lists the most fragmented files with the number of fragments.

To generate a fragmentation analysis:

1 Click the Analysis view icon.

2 Select the drive you want to analyze.

3 Click Start Analyzing.



The time needed for fragmentation analysis depends on the degree of fragmentation, size of the drive, and number of files on the drive.

4 To stop the analysis at any time, click Stop Analyzing.

Note: You can change the colors displayed in the pie chart legend. For more information, see "Customizing map and chart colors" on page 54.

Analyzing multiple drives

You can analyze multiple drives concurrently by selecting drives and starting their analysis one after the other.

To analyze multiple drives concurrently:

1 In the Select A View list, click the Analysis view icon.

2 Select the first drive you want to analyze.

3 Click Start Analyzing.

Norton Speed Disk proceeds to analyze the drive.

4 Select another drive in the list and click Start Analyzing.

Norton Speed Disk proceeds to analyze the second drive.

5 Continue selecting drives until you have selected all the drives you want Norton Speed Disk to analyze concurrently.

Types of analysis

The drive analysis statistics are grouped into four types: optimization level, free space fragmentation, drive utilization, and most fragmented files. These are all described below.

Optimization Level analysis

The optimization analysis checks for the number and percent of fragmented files.

Statistic	Description
Total Files	The total number of files on the drive.
Fragmented Files	Number of fragmented files.
Percent Fragmentation	The percentage of fragmented files on the drive.

If you have a high number of fragmented files, or a large percent of fragmented files on the drive, you should run Norton Speed Disk.

Free Space Fragmentation analysis

The free space fragmentation analysis displays information about the drive's free space.

Statistic	Description
Free Spaces	The total number of free space fragments on the drive.
Free Clusters	The total number of free clusters on the drive.
Largest Free Space	The size, in clusters, of the largest free space on the drive.

Some applications and processes require a certain amount of free space to perform effectively. Lack of contiguous free space can impede performance for these applications. For example, Microsoft Word creates at least one, and often several, temporary files when a document is open. Database files may need at least twice the data file's size to write temporary files to the drive during sorting, updating, or other activity. Print spooling

also requires large amount of disk space when the entire document is printed to the drive before being sent to the printer.

Note: If a drive's largest free space is small (10% or less of the overall drive size), initial optimization may take longer. Norton Speed Disk needs free space to store temporary files during optimization. If drive space is limited, Norton Speed Disk must process a higher number of smaller temporary files. The combination of increased processing time and smaller temporary file sizes results in the longer optimization.

Disk Utilization analysis

The Disk Utilization analysis summarizes how space is used on the drive.

Statistic	Description
Bytes Used	The total number of bytes occupied by files or file fragments on the drive.
Bytes Free	The total bytes of free space on the drive.
Percent Of Disk Used	The percentage of occupied drive space.
Number Of Folders	The total number of folders on the drive.
Number Of Files	The total number of files on the drive.

Most Fragmented Files analysis

This analysis lists the files with the most fragments.

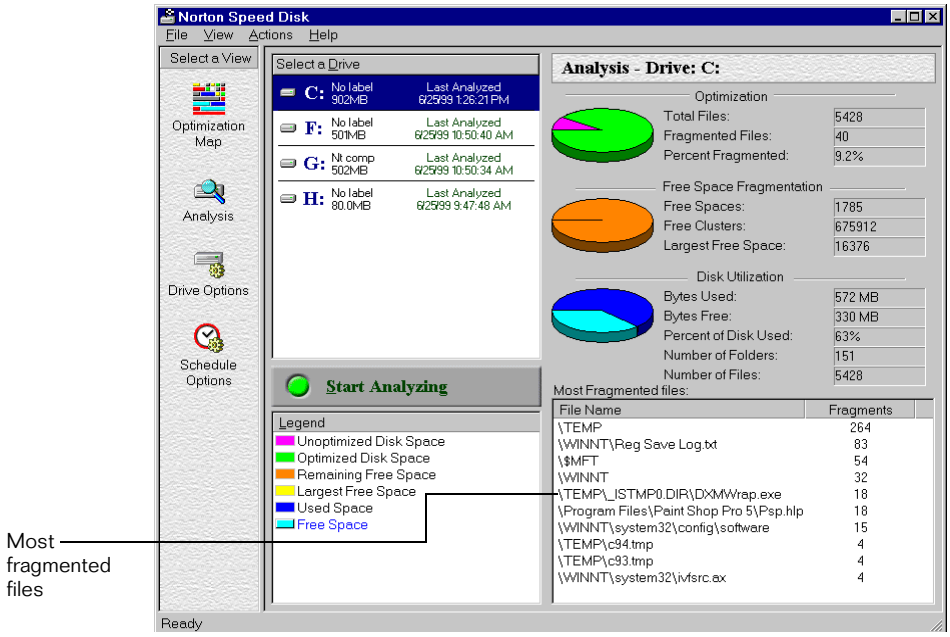
Statistic	Description
File Name	The path and filename of the file.
Fragments	The number of fragments belonging to the file.

If you notice that these files become fragmented frequently, even after optimization, you may wish to specify where you want these files placed during optimization.

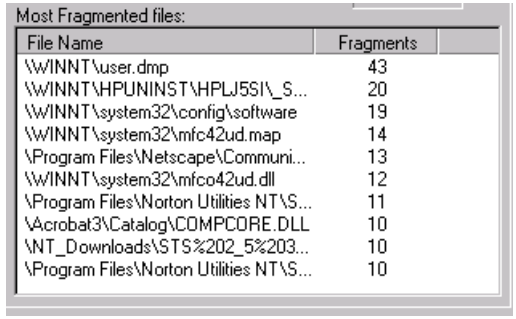
For example, perhaps a file is growing very large and needs more space than is available on the drive. You could use the Drive Options to specify the file be placed in the Files Last category, closest to the free space, so the file can grow larger and remain unfragmented.

Working with the most fragmented files

You can use the Analysis view to identify the most fragmented files, and then use that information to reduce their susceptibility to repeated fragmentation. After you run the analysis, any highly fragmented files are listed in the Most Fragmented Files list.



The list shows the file name, location, and number of fragments.



If these files become fragmented frequently, even following optimization, you can use the Drive Options to specify where you want Norton Speed Disk to place that file during the next optimization. For more information, see "Setting drive options" on page 52.

For example, lets say you have a large database to which several people have been adding and updating records. The file has become fragmented, and you know it is likely to be increasing in size. In the Drive Options, you can add the database filename to the Files Last list. The next time Norton Speed Disk optimizes this drive, this file will be rejoined and moved close to free space, where its expansion will not cause it to fragment.

Adding temporary files to the Files Last drive option

If you use any software that consistently creates temporary files, add them to the Files Last category so that Norton Speed Disk places them at the end of all the other files, and adjacent to the optimized free space so they have room to expand. For example, you could add temporary Internet files in Internet Explorer, temporary cache files in Netscape Navigator, files in the Recycle Bin, and files in the Windows Temp directory.

The following paths show typical locations for temporary files, if a user's TEMP and/or TMP environment variables point to c:\TEMP, and C: is the volume to be optimized:

```
\TEMP\**\*
\Recycled\**\* (FAT volumes)
\Recycler\**\* (NTFS volumes)
```

Internet Explorer URL history:

```
\WINNT\History\**\*
```

Internet Explorer cache:

```
\WINNT\Profiles\user1\Temporary Internet Files\**\*
```

Netscape Navigator cache:

```
\Program Files\Netscape\Communicator\cache\**\*
```

Netscape Navigator main directory (JAVA, plugins, etc.):

```
\Program Files\Netscape\Communicator\**\*
```

Note: The double asterisk characters [**] indicate that all files below the path are included in the selection.

CHAPTER 3

Customizing Norton Speed Disk

About Norton Speed Disk options

You can customize Norton Speed Disk optimization. For example, you can have Norton Speed Disk:

- Automatically optimize volumes based on threshold of fragmentation, and record optimization events to the system Event Log. See "Setting global options" on page 45.
- Customize the optimization for each disk volume and for each scheduled task, including how Norton Speed Disk places files on each drive. See "Setting drive options" on page 52.
- Optimize automatically from a schedule created in Norton Speed Disk. See "Scheduling optimizations" below.
- Run in the background to optimize volumes at preset times. See "Scheduling optimizations" below.

Scheduling optimizations

Norton Speed Disk lets you schedule optimization tasks to run automatically at preset times when drive activity is light. Scheduled optimizations are all run silently in the background, with no interruption or notification to users.

You can specify optimization schedules for each drive. As part of the schedule you can tell Norton Speed Disk to optimize based on the percent of fragmentation, and you can also set a specific schedule.

How often to use Norton Speed Disk

Any time a drive's response time becomes slower, or when a drive analysis indicates that a large percentage of files are fragmented, you should use Norton Speed Disk to restore the drive's performance.

Note: Optimizing multiple drives concurrently will affect overall performance. The maximum number of concurrent drive optimizations is unlimited, but the recommended number is 2 or less.

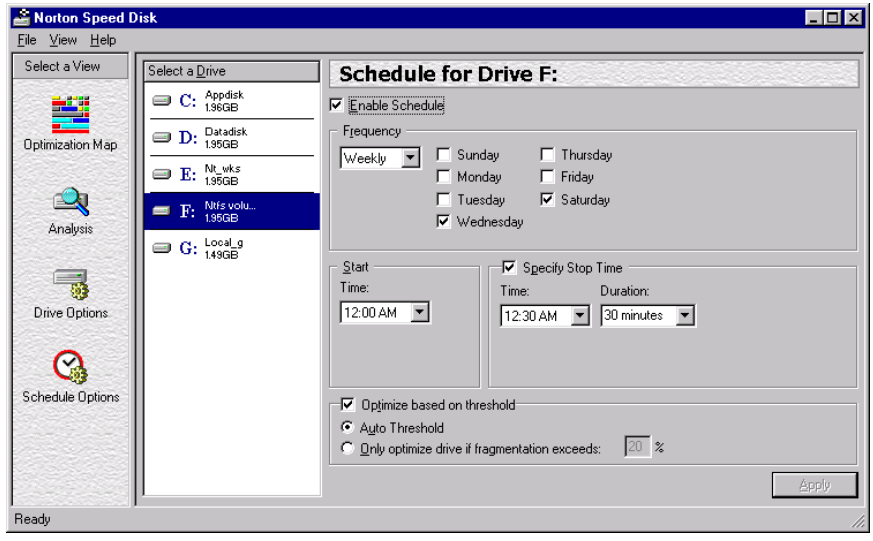
Setting a scheduled optimization time

You can schedule regular optimization on a recurring day and time, or by the percent of fragmentation level.

To have Norton Speed Disk optimize at a set time:

1 In the Select A View list, select Schedule Options.

2 Select the drive whose schedule you want to set.



3 Click the Enable Schedule check box.

Note: On non-NTFS volumes, checking this option will prompt you to run CHKDSK/F manually after you click Apply.

Select a frequency from the list. Your options are:

Startup	Optimization occurs every time the machine is started.
Once	Optimization occurs once at the time and date you specify.
Daily	Optimization occurs daily at the time you specify.
Weekly	Optimization occurs weekly at the time and day you specify.
Monthly	Optimization occurs monthly at the time and day you specify.

4 Select a start time for optimization.

If you want to ensure that optimization will not continue after a certain time, for example, when another process is due to start, or at a time when network traffic is heavy, you can also set a stop time. Otherwise, Norton Speed Disk runs until optimization is complete.

5 Click Apply.

Note: Scheduled optimizations take place in the background. When it is running in the background, Norton Speed Disk gives priority to all other NT processes. If many other processes are constantly using system resources, scheduled optimizations may not have enough resources to complete as quickly as you expect. To give scheduled optimizations greater priority over other running processes, you can alter the Priority setting in the Global Options dialog box. For more information, see "Adjusting priority and memory resource use" on page 46.

Setting a fragmentation threshold

In the Schedule Options you can select a fragmentation threshold. When the selected drive reaches the specified degree of fragmentation, Norton Speed Disk will optimize it.

You can select Auto Threshold or enter a percentage. The default fragmentation percentage threshold is determined by the drive's fragmentation level, and is managed by the Auto Threshold feature.

For example, if you set the fragmentation threshold to 5% (within the recommended range) Norton Speed Disk will begin optimizing in the background when the level reaches that percent.

To set an optimization schedule by threshold:

1. In the View list, select Schedule Options.
2. Select the Optimize Based On Threshold check box.

   Auto Threshold is enabled by default. It will cause Norton Speed Disk to optimize the selected disk when fragmentation goes over an amount determined by the drive characteristics.
3. To specify another threshold, select Only Optimize Drive If Fragmentation Exceeds: and enter a percentage value. The recommended percentage is between 2% and 5%.

   This ensures that Norton Speed Disk optimizes when the fragmentation percentage reaches the level you specify, at the scheduled time.
4. Click Apply.

Note: The threshold setting only applies to drive optimizations that you schedule. The schedule must be enabled for this setting to take effect.

Optimizing in the background

There are several ways to run Norton Speed Disk in the background:

- Use the scheduling feature of Norton Speed Disk to specify when and how you want the drive volumes optimized. All scheduled optimizations run in the background. For more information, see "Scheduling optimizations" on page 41.

  Note: If you are scheduling optimizations on several drives, use the Maximum Concurrent Drive Optimizations setting (page 48) to specify the maximum number of drives that Norton Speed Disk optimizes at any one time.

- Close or minimize Norton Speed Disk after starting the optimization. For more information, see "Start optimization and close" on page 45.
- Minimize the effect of background optimization on applications running in the foreground by setting the optimization priority to Idle. To set the optimization priority, choose View > Global Options and drag the Priority slider to Idle. For more information, see "Adjusting priority and memory resource use" on page 46.

Start optimization and close

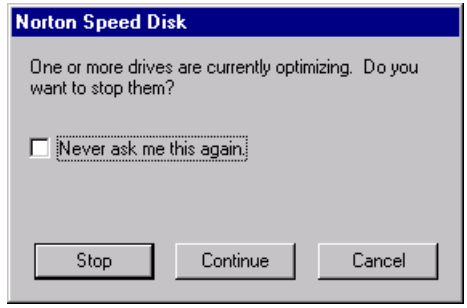
When you start Norton Speed Disk and close the program, optimization continues unless you want it stopped.

To start and close:

1. Start Norton Speed Disk.
2. In the Select A View list, click Optimization Map.
3. Select a drive and click Start Optimizing.

   Once optimization has started, you can quit Norton Speed Disk, and optimization continues in the background.
4. From the File menu choose Exit.

   Norton Speed Disk asks if you want to stop optimization.



5. To keep optimizing in the background, click Continue.

   If you don't want to be prompted again, select the Never Ask Me This Again check box.

Setting global options

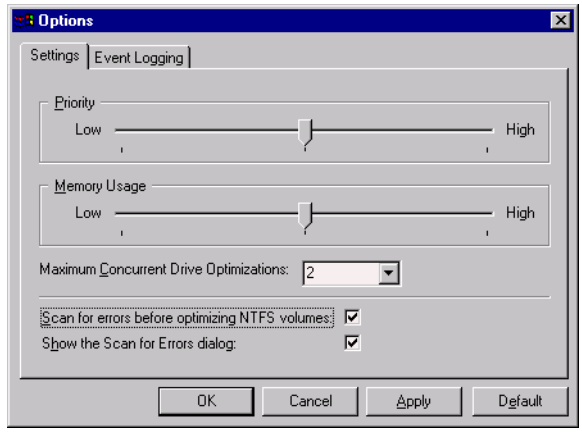
Norton Speed Disk global options affect its overall performance during optimization:

- On the Settings tab (page 46), you can customize how Norton Speed Disk uses your system's resources.
- On the Event Logging tab (page 48), you can specify what events to log and if and when to send alerts.
- (Enterprise edition only.) On the Install tab (page 51), network administrators using Norton System Center can configure Norton Speed Disk installation. (This tab only applies when Norton Speed Disk is used in combination with Norton System Center. For more information,

see the *Norton Speed Disk for Windows NT/2000 Implementation Guide* on the Norton Speed Disk for Windows NT Servers CD.)

To set Norton Speed Disk global options:

1 From the View menu, choose Global Options.



2 In the Options dialog box, click the Settings or Event Logging tab.

3 Make changes to the options and click Apply.

4 When you are finished making changes in the Options dialog box, click OK.

Adjusting priority and memory resource use

The Settings tab lets you adjust Norton Speed Disk use of machine resources. When you adjust the Priority and Memory Usage settings, you determine how much of the machine's resources Norton Speed Disk uses to optimize.

Normally, Norton Speed Disk takes low priority. If you want to optimize faster at the possible expense of other processes that may be running concurrently, you can move the slider to a higher priority. If you do not want Norton Speed Disk to optimize before other processes run, you can minimize the effect of background optimization by adjusting the Priority setting.

To adjust optimization priority:

1 From the View menu, choose Global Options.

2 On the Options dialog box Settings tab, move the Priorities slider to Low or High.

Setting	Description	Effect
Priority	Sets Norton Speed Disk priority for using system resources. Low - Machine must be idle before Speed Disk processes take priority. Medium - For this default setting, other processes on the machine take priority over Speed Disk processes. High - Speed Disk processes share normal priority with other processes.	Priority = Low: Optimization takes longer but uses fewer machine resources. Priority = Medium: Optimization takes some time, letting other machine resources take priority. Priority = High: Optimization is faster but uses more machine resources and has more impact on other running software.
Memory Usage	Sets Norton Speed Disk priority for using memory. Low - Norton Speed Disk memory usage is aggressively trimmed. Medium - This default setting is recommended in most cases. High - The bitmap is compressed. (This setting is not recommended unless no other applications are running during optimization.)	When the slider is moved to the left, optimization takes longer but uses less memory. When the slider is moved to the right, optimization is faster, but uses more memory.

Setting	Description	Effect
Maximum Concurrent Drive Optimizations	Limits the number of drives that Norton Speed Disk is allowed to optimize at the same time. The default setting is 2. If you start a third optimization, one of the first two optimizations must finish before the third can begin.	The higher the number of drives being optimized concurrently, the more machine resources will be used by Norton Speed Disk, and the longer each optimization will take. The maximum number of drives Norton Speed Disk can optimize concurrently is unlimited, but the default setting of 2 (or less) is recommended.
Scan For Errors Before Optimizing NTFS Volumes	Norton Speed Disk quickly checks the NTFS volume for any errors before optimizing. The default is off.	If the integrity check runs while there is disk activity, it may report false errors. Other processes should not be running if you use this option.

Note: On non-NTFS volumes, checking this option will prompt you to run CHKDSK/F manually after you click Apply.

Recording optimization events

You can record optimization events to the Event Log maintained by the system and view the records using the system Event Viewer. These events can also be sent to the Norton System Center Console. The Event Logging tab lets you specify which event types to log (Error, Warning, or Information), and what notification, if any, to send to administrators or to the Norton System Center Console.

Note: For a list of events, see "Event types" on page 57.

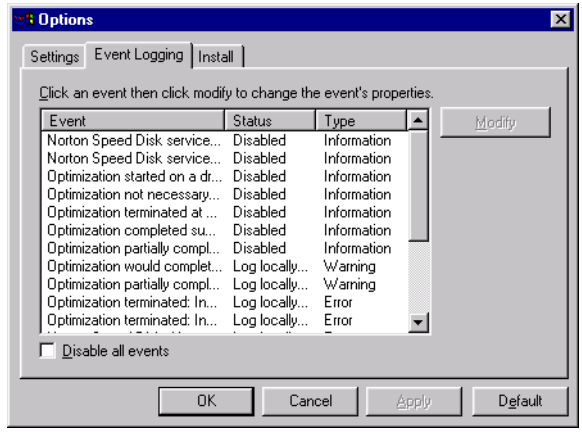
Configuring event types

Use the Event Logging tab to define what types of events are logged for Norton Speed Disk activity.

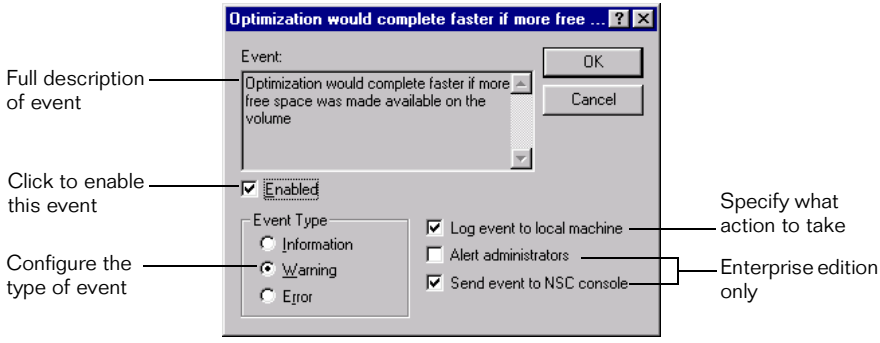
To configure event types:

1 From the View menu, choose Options.

2 On the Event Logging tab, select an event.



3 Click Modify.



4 In the selected event's dialog box, enable the event.

5 Specify an Event Type for the selected event:

- Information

  The event is for information only and no further action is needed.

- Warning

  The event may indicate a problem and should be investigated further.

- Error

  The event indicates an error, for example, that Norton Speed Disk was not able to complete optimization.

6 Specify how you want the event handled:

- Log Event To Local Machine

  The event is added to the workstation's event log and can be viewed by the System Event Viewer.

- (Enterprise edition only) Alert Administrators

  The event is added to the workstation's event log and an alert is sent to administrators listed in the system information.

- (Enterprise edition only) Send Event To NSC Console

  The event is added to the workstation's event log and an alert is sent to the NSC Console.

7 Click OK.

8 Continue selecting and configuring events in the list.

9 On the Event Logging tab, click Apply, or click OK to apply changes and close the dialog box.

10 To disable all event logging, select Disable All Events.

Sending events

You can also have Norton Speed Disk send administrative alerts to the system administrator or to another user whenever a Norton Speed Disk event occurs. The event need not be logged in order to send alerts. You can configure alerts from the Server control in the Windows Control Panel.

Note: To use the alert feature, the Alerter and Messenger services must be running.

To send alerts:

1. On the Event Logging tab, make sure event logging is enabled.
2. Choose a Norton Speed Disk event.
3. Click Modify.
4. If the event is to be logged, choose how the event should be labeled in the log (Information, Warning, or Error).
5. To send an administrative alert when this event occurs, check Send Administrative Alert. (The event need not be logged to send administrative alerts.)

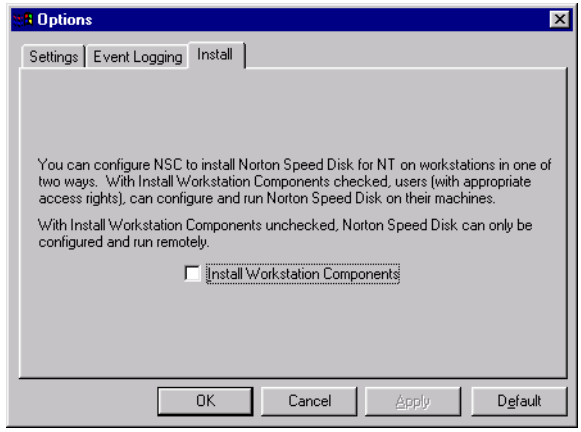
You can view recorded optimization events in the System Event Viewer. To use the alert feature, the Alerter and Messenger system services must be running.

Note: For a list of all available events, see "Event types" on page 57.

Install tab settings

The Install tab is available for the Norton System Center snap-in version of Norton Speed Disk. If you are not using Norton System Center, you can disregard this tab.

This option lets network administrators use the Norton System Center Console to install the command-line version of Norton Speed Disk.



For more information, see the *Norton Speed Disk Implementation Guide* PDF file on the Norton Speed Disk for Windows NT/2000 Server CD.

Setting drive options

These options determine how Norton Speed Disk optimizes specific drives. For example, if one drive contains mostly data, and another contains a combination of data and frequently-used applications, you may want to specify file placement for the frequently-used applications.

About file placement

In general, Norton Speed Disk default settings for placing files provides the best performance. Change the drive's default settings only if your files require special consideration.

For example, if you use a disk utility that updates certain file dates even when those files have not been used, you may want to limit optimization on these files so Norton Speed Disk doesn't move them to the area of the disk reserved for frequently used files.

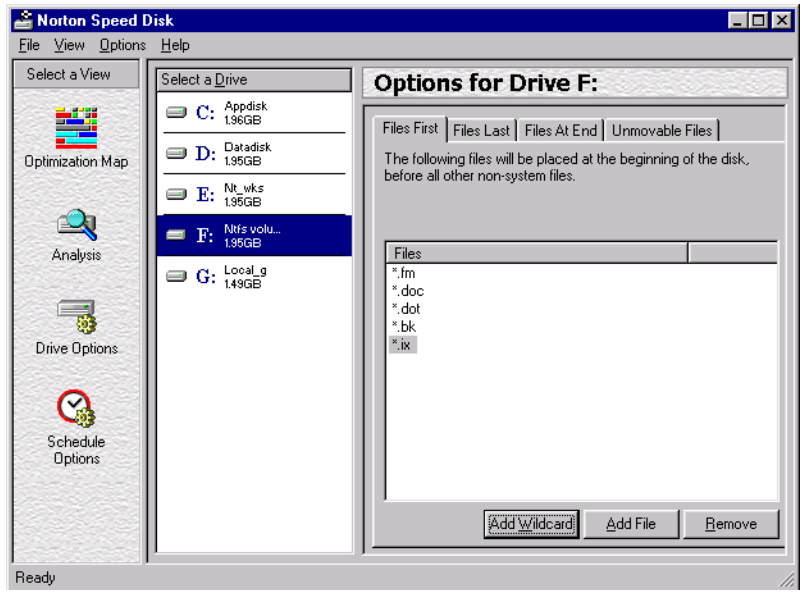
Customizing file placement

If you want to place files in a specific location, overriding the Norton Speed Disk default file placement, use the Drive Options view. This view lets you select files or file types and specify where they should be placed during optimization.

For more information about optimizing file locations, see "File placement during optimization" on page 23.

To set drive options:

1 In the Select A View list, click the Drive Options icon or select Drive Options from the View menu.



2 Select the drive whose options you want to change.

3 Make the changes to the options tabs.

Your changes take effect immediately.

Specifying file placement during optimization

The drive options let you specify how you want files placed during optimization.

- Files First

  Speed Disk places the selected files at the very beginning of the disk for fastest access. Files that are frequently accessed but not modified, such as program (.EXE and .DLL) files, should be placed first on the disk.

- Files Last

  Use this option to place infrequently used files after all other files, but before the free space.

- Files At End

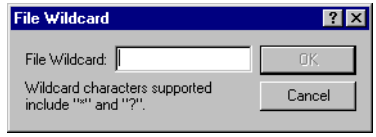
  Use this option to place selected files after all the other files and free space. Place infrequently accessed files here.

- Unmovable Files

  Use the Unmovable Files option to specify files that you do not want moved during optimization. For example, if you have applications that expect files in specific locations on the disk, make sure they are added to this list.

To add files to the Files First, Files Last, Files At End, or Unmovable Files lists:

1. Select the drive whose file placement you want to customize.
2. Bring the Files First, Files Last, Files At End, or Unmovable Files tab to the front.
3. To add a single file:
   a. Click Add File.
   b. Locate and select the file you want to add.
   c. Click OK.
4. To add a group of files of the same file type:
   a. Click Add Wildcard.



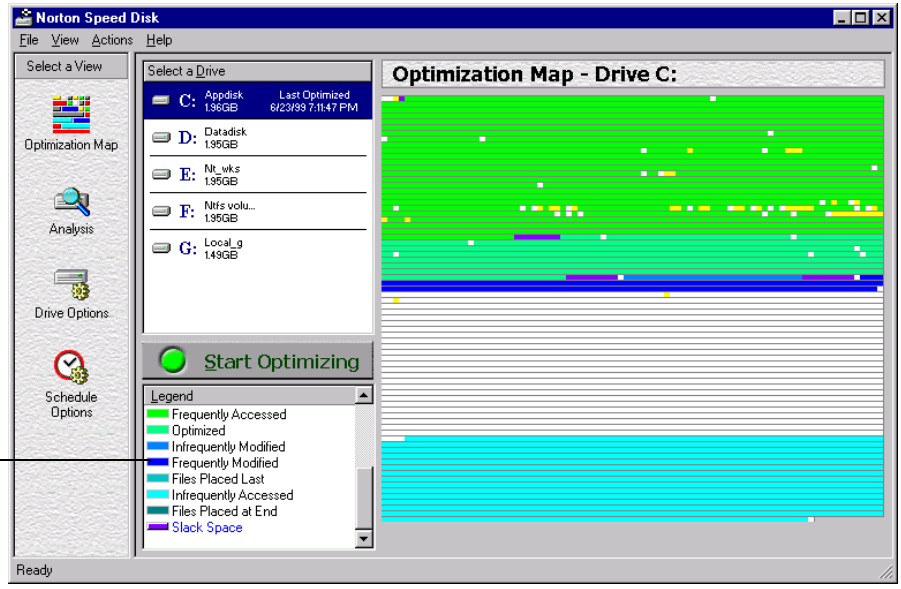
   b. Enter the wildcard characters (such as *.EXE or *.DLL) and click OK.

Customizing map and chart colors

You can customize the colors that appear on analysis charts and drive optimization maps by changing the Legend colors. The changes you make apply to all charts and drive maps.

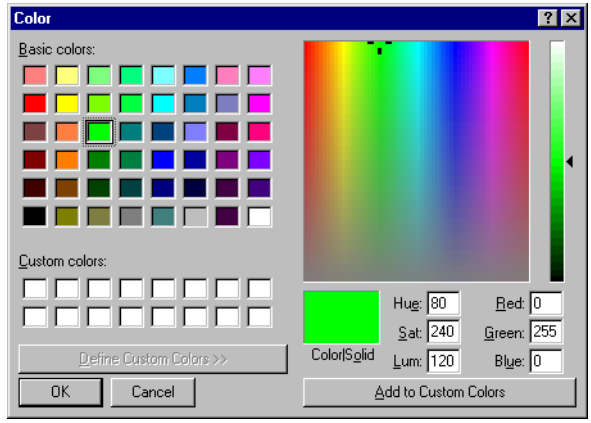
To customize drive map colors:

1 In the Select A View list, click the Optimization Map or Analysis view.



Click any color to open the Color dialog box

2 Click any color in the Legend.



3 Click the color you want to represent this type of block in the drive map.

4 Click OK.

APPENDIX A

Norton Speed Disk events

Event types

The following events can be recorded in the Norton Speed Disk event log. You can change the type and status of these events, and specify if you want an alert sent to an administrator or to another workstation. For more information, see "Recording optimization events" on page 48.

Event Name	Status	Type
Norton Speed Disk service started	Disabled	Information
Norton Speed Disk service stopped	Disabled	Information
Optimization started on a drive	Disabled	Information
Optimization not necessary: Fragmentation below threshold	Disabled	Information
Optimization terminated at user request	Disabled	Information
Optimization completed successfully	Disabled	Information
Optimization partially complete: Files created/extended during the run were not optimized	Disabled	Information
Optimization would complete faster if more free space was made available on the volume	Enabled	Error

Event Name	Status	Type
Optimization partially complete: Account running Norton Speed Disk does not have access to one or more files	Enabled	Error
Optimization terminated: Insufficient free space	Enabled	Warning
Optimization terminated: Invalid drive	Enabled	Warning
Norton Speed Disk driver unavailable or corrupt	Enabled	Warning
Norton Speed Disk driver failed: Unknown service pack	Enabled	Warning
Optimization terminated: Insufficient memory	Enabled	Warning
Optimization terminated: Device went offline during run	Enabled	Warning
Optimization terminated: Data corruption detected	Enabled	Warning
Optimization terminated: Unrecognized exception	Enabled	Warning
Optimization not started: Volume integrity check failed	Enabled	Warning

APPENDIX B

Frequently asked questions

This section includes frequently asked questions and other topics related to Norton Speed Disk.

Note: Be sure to check the Readme.txt file included with the installation files for any late-breaking issues not covered in this section.

Compatibility - Hardware

Does Norton Speed Disk work on NTFS partitions?

Yes. Norton Speed Disk is compatible with any partition that is Windows NT 4.0 compatible.

Does Norton Speed Disk work on FAT16 partitions?

Yes.

Does Norton Speed Disk work on FAT32 partitions?

Yes, on Windows 2000 only. However, prior to optimizing you will be prompted to run CHKDSK if on these volumes.

How do I run CHKDSK manually?

Select Start/Programs/Command Prompt (NT4) or Start/Programs/Accessories/Command Prompt (Windows 2000) and type the command

CHKDSK X: /F (Where X: is the letter of the drive to be optimized). Follow any on-screen prompts.

Why doesn't Norton Speed Disk completely optimize my FAT volume?

For FAT volumes, Norton Speed Disk uses the Windows MoveFile technology, which does not defragment directories, MFT, or paging files. Norton Speed Disk does optimize these types of files on NTFS drives.

Does Norton Speed Disk work with SCSI drives, mirrored drives, RAID systems (often seen as RAID Level 5), and striped sets with or without parity?

Yes.

Can Norton Speed Disk optimize removable drives such as Zip and Jaz drives?

Yes, as long as the media is in the drive before starting Norton Speed Disk. Norton Speed Disk scans for readable media before it starts up.

Will Norton Speed Disk work with cluster servers?

This version of Norton Speed Disk is not cluster-aware. There will be no failover capabilities. Like other software running in a MSCS environment, you can install Norton Speed Disk to all member servers on non-shared drives. Do not install Norton Speed Disk to a shared drive. Since shared drives are visible only to one machine, if you run Norton Speed Disk normally on all member servers, both shared and local drives will be optimized.

Does Norton Speed Disk work on HPFS partitions?

No. HPFS partitions are not compatible with Windows NT 4.0.

Does Norton Speed Disk work on DEC Alpha systems?

No. It is compatible with x86 processors only. The minimum requirement is an Intel 80486/66 processor (Pentium processor recommended).

Does Norton Speed Disk work on 8K clusters?

Yes. On NTFS and FAT drives, Norton Speed Disk will work on any cluster size.

Compatibility - Operating systems

Does Norton Speed Disk work in Windows 95 and Windows 98?

Norton Speed Disk will only work when the system is booted into Windows NT/2000. It will not work when booted into Windows 9x.

To run Norton Speed Disk from within Windows 9x, install Norton Utilities for Windows 95, version 5.0, when you are booted into Windows 95 or Windows 98.

Does Norton Speed Disk work on Windows NT 3.51?

No. Symantec does not have a defragmenter for Windows NT 3.51.

Does Norton Speed Disk work on Windows NT 4.0 with Service Pack 1 or Service Pack 2?

Norton Speed Disk was written to work with Windows NT 4.0, Service Pack 3, 4, 5, or 6. It should not be installed on a system that has Service Pack 1 or 2 installed.

Does Norton Speed Disk work on Windows 2000 (Windows NT 5.0)?

Yes.

Does Norton Speed Disk in Norton Utilities for Windows NT/2000 work on Windows 95 partitions?

Norton Speed Disk is compatible with any partition that is recognized by Windows NT 4.0. It works on all types of Windows 95 partitions.

Does Norton Speed Disk replace any Windows NT system files in order to work?

No.

What if I have a FAT32 partition?

Norton Speed Disk is compatible with any partition that is Windows NT 4.0 or Windows 2000 compatible. This includes NTFS, FAT16, and FAT32 partitions. Third-party FAT32 drivers for NT 4.0 are not supported. However, prior to optimizing you will be prompted to run CHKDSK if on these volumes.

Compatibility - Other

Does Norton Speed Disk work on memory-mapped databases (such as Oracle)?

Yes.

What is the difference between Norton Speed Disk disk optimization and file defragmentation?

Disk optimization refers to defragmenting all elements on a drive (including the paging file, directories, MFT, metadata, free space, and files), reordering the elements to improve the speed at which critical elements can be accessed, and allocating small amounts of slack space to prevent future fragmentation.

File defragmentation refers simply to reordering non-contiguous pieces of a file in order to make them contiguous. For more information, see "Optimization vs. defragmentation" on page 7.

Can you schedule Norton Speed Disk?

Yes. For details, see "Scheduling optimizations" on page 41.

Does Norton Speed Disk defragment the Master File Table (MFT)?

Yes.

Does Norton Speed Disk defragment directories?

Yes.

Does Norton Speed Disk defragment meta data?

Yes.

Can Norton Speed Disk optimize multiple hard drives at the same time?

Yes, Norton Speed Disk can optimize multiple hard drives concurrently. You must select and start them individually, or schedule them sequentially.

Can you run Norton Speed Disk from a floppy?

No. Norton Speed Disk is a Windows NT/2000 application, and can only be run while the system is booted into Windows NT/2000.

Why is the fragmentation percentage higher after shutting down and rebooting?

Norton Speed Disk figures obtained before shutdown are not an exact indication of fragmentation after shutdown. Shutting down a system flushes the buffer (disk cache) to the hard drive, so after you reboot, a more accurate analysis of the hard drive is possible.

The figures obtained after rebooting may indicate a higher percentage of fragmentation if there are many files that must be moved on a first-time optimization. In this case, Norton Speed Disk might need more than one pass to fully optimize a system. However, this is the exception.

What files are unmovable?

Norton Speed Disk does not move the following file types:

- Some types of meta data files. Certain meta data such as the volume bitmap, boot record, and the bad-block file may be considered unmovable for safety reasons.
- Files for which you don't have access rights. For example, if there are shared files on a volume, you must log in with Administrator rights before starting Norton Speed Disk or the file system will not allow the file to be moved.
- On FAT volumes the paging file and directories are not moved, because Norton Speed Disk uses a different technology on FAT volumes than is used on NTFS volumes. A FAT volume, however, is still optimized.

How can I perform Norton Speed Disk operations from the command line? (Enterprise edition only)

The Sdntrun.exe command is available for command-line optimization.

- On the command line, enter Sdntrun.exe followed by the drive letters that you want to optimize.

  For example, "SDNTRUN.EXE D: E:" runs Norton Speed Disk on drives D and E.

Can Norton Speed Disk optimize a drive offline?

Unlike other defragmentation programs, Norton Speed Disk can completely optimize a drive online. It is no longer necessary to optimize drives offline.

Service and support solutions

Service and support information is available from the Help system of your Symantec product. Click the Service and Support topic in the Help index.

Technical support

Symantec offers several technical support options:

- StandardCare support

  Connect to the Symantec Service & Support Web site at http://service.symantec.com, then select your product and version. This gives you access to product knowledge bases, interactive troubleshooter, Frequently Asked Questions (FAQs), and more.

- PriorityCare, GoldCare, and PlatinumCare support

  Fee-based telephone support services are available to all registered customers. For complete information, please call our automated fax retrieval service at (800) 554-4403 and request document 933000.

  For telephone support information, connect to http://service.symantec.com, select your product and version, and click Contact Customer Support.

- Automated fax retrieval

  Use your fax machine to receive general product information, fact sheets, and product upgrade order forms by calling (800) 554-4403. For technical application notes, call (541) 984-2490.

Support for old and discontinued versions

When a new version of this software is released, registered users will receive upgrade information in the mail. Telephone support will be provided for the old version for six months after the release of the new version. Technical information may still be available through the Service & Support Web site (http://service.symantec.com).

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May 2000

Norton Speed Disk™ for Windows NT Work Station

CD Replacement Form

DISK REPLACEMENT: After your 60-Day Limited Warranty, if your CD becomes unusable, fill out and return 1) this form and 2) your payment (see pricing below, add sales tax if applicable), to the address below to receive replacement disks. *DURING THE 60-DAY LIMITED WARRANTY PERIOD, THIS SERVICE IS FREE.* You must be a registered customer in order to receive disk replacements.

FOR CD REPLACEMENT

Please send me: ___ CD (replacement)

Name _____

Company Name _____

Street Address (No P.O. Boxes, Please)_____

City _____ State _____ Zip/Postal Code _____

Country* _____Daytime Phone _____

Software Purchase Date _____

*This offer limited to U.S., Canada, and Mexico. Outside North America, contact your local Symantec office or distributor.

Briefly describe the problem:_____

_____

Disk Replacement Price	$ 10.00
Sales Tax (See Table)	_____
Shipping & Handling	$ 9.95
TOTAL DUE	_____

SALES TAX TABLE: AZ (5%), CA (7.25%), CO (3%), CT (6%), DC (5.75%), FL (6%), GA (4%), IA (5%), IL (6.25%), IN (5%), KS (4.9%), LA (4%), MA (5%), MD (5%), ME (6%), MI (6%), MN (6.5%), MO (4.225%), NC (6%), NJ (6%), NY (4%), OH (5%), OK (4.5%), PA (6%), SC (5%), TN (6%), TX (6.25%), VA (4.5%), WA (6.5%), WI (5%). Please add local sales tax (as well as state sales tax) in AZ, CA, FL, GA, MO, NY, OH, OK, SC, TN, TX, WA, WI.

FORM OF PAYMENT ** (CHECK ONE):

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Name on Card (please print) _____ Signature _____

**U.S. Dollars. Payment must be made in U.S. dollars drawn on a U.S. bank.

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Attention: Order Processing
175 West Broadway
Eugene, OR 97401-3003
Please allow 2-3 weeks for delivery within the U.S.

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